

Appl. No. 10/756,164
Amendment dated March 2, 2006
Reply to Office Action mailed December 29, 2005

BEST AVAILABLE COPY

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Original): A fluorescence measuring device for a gemstone under test, said fluorescence measuring device comprising:

an ultraviolet ("UV") radiation source configured to provide trans-radiation and direct radiation to the gemstone under test; and
a light detector positioned proximate the gemstone under test, said light detector being configured to detect visible light emitted from the gemstone under test in reaction to UV radiation applied to the gemstone under test.

Claim 2 (Original): A fluorescence measuring device according to claim 1, wherein said UV radiation source comprises a plurality of light emitting diodes ("LEDs").

Claim 3 (Original): A fluorescence measuring device according to claim 2, wherein said plurality of LEDs comprises an upper LED that emits UV radiation along an emission axis and a lower LED that emits UV radiation along said emission axis.

Claim 4 (Original): A fluorescence measuring device according to claim 3, wherein: said upper LED emits UV radiation toward said lower LED; and said lower LED emits UV radiation toward said upper LED.

Claim 5 (Original): A fluorescence measuring device according to claim 3, wherein said lower LED includes a mounting surface configured to accommodate the gemstone under test.

Appl. No. 10/756,164
Amendment dated March 2, 2006
Reply to Office Action mailed December 29, 2005

BEST AVAILABLE COPY

Claim 6 (Original): A fluorescence measuring device according to claim 5, wherein said mounting surface is configured to accommodate the gemstone under test in a table-down position.

Claim 7 (Original): A fluorescence measuring device according to claim 2, further comprising a user interface element for adjusting the output power of said plurality of LEDs.

Claim 8 (Original): A fluorescence measuring device according to claim 7, wherein said user interface element controls the current applied to said plurality of LEDs.

Claim 9 (Original): A fluorescence measuring device according to claim 1, wherein said light detector is configured such that its spectral response simulates the spectral response of the human eye.

Claim 10 (Original): A radiation subsystem for use with a gemstone fluorescence measuring device, said radiation subsystem comprising:
an upper ultraviolet ("UV") radiation source that emits UV radiation along an emission axis;
a lower UV radiation source that emits UV radiation along said emission axis; and
a mounting surface, located between said upper UV radiation source and said lower UV radiation source, configured to accommodate a gemstone under test.

Claim 11 (Original): A radiation subsystem according to claim 10, wherein said upper UV radiation source and said lower UV radiation source are configured to provide trans-radiation and direct radiation to the gemstone under test.

Appl. No. 10/756,164
Amendment dated March 2, 2006
Reply to Office Action mailed December 29, 2005

BEST AVAILABLE COPY

Claim 12 (Original): A radiation subsystem according to claim 10, wherein: said upper UV radiation source comprises a first light emitting diode ("LED"); and said lower UV radiation source comprises a second LED.

Claim 13 (Original): A radiation subsystem according to claim 10, wherein: said upper UV radiation source emits UV radiation toward said lower UV radiation source; and said lower UV radiation source emits UV radiation toward said upper UV radiation source.

Claim 14 (Original): A radiation subsystem according to claim 10, wherein said lower UV radiation source forms said mounting surface.

Claim 15 (Original): A radiation subsystem according to claim 10, further comprising a user interface element for adjusting the output power of said upper UV radiation source and said lower UV radiation source.

Claim 16 (Original): A fluorescence measurement method for gemstones, said method comprising:

radiating a gemstone under test with ultraviolet ("UV") radiation from both above and below the gemstone under test; detecting visible light emitted from the gemstone under test in reaction to UV radiation applied to the gemstone under test, resulting in a detected visible light measurement; and grading fluorescence of the gemstone under test based upon the detected visible light measurement.

Claim 17 (Original): A method according to claim 16, wherein said radiating step radiates the gemstone under test with a UV radiation source that provides trans-radiation and direct radiation to the gemstone under test.

Claim 18 (Original): A method according to claim 16, wherein said radiating step comprises: emitting UV radiation from an upper light emitting diode ("LED") along

Appl. No. 10/756,164
Amendment dated March 2, 2006
Reply to Office Action mailed December 29, 2005

BEST AVAILABLE COPY

an emission axis; and emitting UV radiation from a lower LED along said emission axis.

Claim 19 (Original): A method according to claim 18, wherein: said upper LED emits UV radiation toward said lower LED; and said lower LED emits UV radiation toward said upper LED.

Claims 20-21 (canceled)

Claim 22 (currently amended): A fluorescence measuring device for a gemstone under test, said fluorescence measuring device comprising:

an ultraviolet ("UV") radiation source configured to provide radiation to the gemstone under test; and
a light detector positioned proximate the gemstone under test, said light detector being configured to measure directly the intensity of visible light emitted from the gemstone under test in reaction to UV radiation applied to the gemstone under test A fluorescence measuring device according to claim 20, wherein said UV radiation source comprises a plurality of LEDs including an upper LED that emits UV radiation along an emission axis and a lower LED that emits UV radiation along said emission axis.

Claim 23 (previously presented): A fluorescence measuring device according to claim 22, wherein: said upper LED emits UV radiation toward said lower LED; and said lower LED emits UV radiation toward said upper LED.

Claims 24-31 (canceled)